

Needs Assessment of Library Data Services: Establishing a Curriculum Framework for RDMLA

Rong Tang^a and Zhan Hu^a

^aSimmons University, USA

rong.tang@simmons.edu, zhan.hu@simmons.edu

ABSTRACT

This paper reports the results of a needs assessment survey on research data management (RDM) services in libraries. Over 240 practicing librarians responded to the survey and outlined their roles and levels of preparedness in providing RDM services, challenges their libraries face, and knowledge and skills that they deemed essential to advance the RDM practice. Findings of the study not only provided valuable insights into the current RDM practices and librarians' views of RDM related training and professional development, but also formed the foundation for the RDMLA (Research Data Management Librarian Academy) curriculum framework.

TOPICS

data management; data curation; data visualization; academic libraries

INTRODUCTION

With the growing need in research data management, libraries started to provide data services to researchers within their institutions. According to Perrier, Blondal, and MacDonald (2018), “although libraries play a role in research data management (RDM) at academic institutions, they have experienced varying degrees of success with the development of RDM support and services given this expanded responsibility” (p. 173). In addition to multiple studies on perceptions of faculty or librarians in their endeavor of working collaboratively on RDM (e.g., Tenopir, Sandusky, Allard, & Birch, 2014; Antell, Foote, Turner, & Shults, 2014; Perrier & Barnes, 2018), there have been notable efforts of delivering RDM training for librarians worldwide. Existing RDM training programs include Research Data Management Training for Information Professionals by New York University (<https://compass.iime.cloud/mix/G3X5E/>), the MANTRA training (<https://mantra.edina.ac.uk/libtraining.html>) by University of Edinburgh, the RDMRose project (<http://rdmrose.group.shef.ac.uk/>) funded by JISC. NNLM (National Network of Libraries of Medicine) also sponsored Biomedical and Health Research Data Management for Librarians (<https://nnlm.gov/classes/biomedical-and-health-research-data-management-librarians>) and Research Data Management webinar series

(<https://nml.gov/classes/nml-research-data-management-webinar-series>). Nevertheless, the effort on developing a holistic, expandable, and openly accessible RDM curriculum created by multi-institutional practicing librarians is very limited. Furthermore, despite a few studies on global level RDM activities (e.g., Cox, Kennan, Lyon, & Pinfield, 2017; Tenopir, et al., 2017), empirical investigations into the current state of practice of library data services, specifically concerning the roles that librarians play in the RDM ecosystem and the fundamental knowledge and skills needed are still lacking. Through surveying practicing data librarians, the present study is a needs assessment of RDM knowledge and skills required of librarians. The study results helped to establish a curriculum framework pertinent to Research Data Management Librarian Academy (RDMLA), which is currently in production and expected to be launched in Fall 2019.

Established through a unique partnership among a LIS school, academic libraries, and a publisher, RDMLA (<https://rdmla.github.io/home/>) is a free online training program for information professionals throughout the world. RDMLA partner institutions include Harvard University, Simmons University, Boston University, Tufts University, MCPHS University, Northeastern University, Brown University, and Elsevier, which financially supported the program.

The present study addresses the following questions:

RQ1. What is the state of current practice of RDM services in libraries?

RQ2. What role do librarians play in providing RDM services?

RQ3. What knowledge and skills do librarians view as needed for RDM training?

RQ4. How do participants see the evolving role of RDM librarianship?

METHODOLOGY

This study features an online survey containing 19 questions inquiring into the current practice of RDM in libraries, how prepared librarians were in RDM, and knowledge and skills needed for RDM, and more. In May 2018, a call for participation was sent to various librarian communities through email posting, blog posts, listservs, and word of mouth. A total of 241 responses were received. Answers to questions were not mandatory, so the number of responses to each question varied. Authors coded responses and analyzed the data. Results are outlined below.

RESULTS

RDM services.

Sixty-three respondents reported the kind of RDM services their libraries offered. The frequently offered services included *RDM planning* (n=51, 80.95%), *data sharing and dissemination* (n=49, 77.78%), *data discovery and access* (n=42, 66.67%), *data preservation* (n=42, 66.67%), *metadata* (n=41, 65.08%), *data organization and curation* (n=37, 58.73%), and

data visualization (n=36, 57.14%). Participants indicated that the RDM tools provided by their institutions were *Data repositories* (n=44, 77.19%), *data processing software* (n=38, 66.67%), *data citation manager* (n=23, 40.35%), and *electronic lab notebooks* (n=21, 36.84%).

The most frequently reported challenges that libraries faced included *Capacity/bandwidth, and limited Staffing* (n=23, 42.59%), *marketing and outreach* (n=11, 20.37%), *upskilling staff* (n=9, 16.67%), *collaborative understanding* (n=8, 14.81%), *consistent service* (n=7, 12.96%), and *researcher's misconception of RDM services* (n=7, 12.96%).

Librarians' role.

As shown in Figure 1, a majority of the respondents (n=147, 61.51%) indicated their RDM role was “not developed.” and that they wished to have a more formal role (n=121, 88.32%). Sixty-one (70.11%) felt personally prepared to offer RDM services, whereas 26 (29.89%) claimed unprepared. Reasons for those feeling unprepared included *lack of training* (n=8, 31%), *lack of knowledge and skills* (n=7, 27%), *comfortable with providing basic service* (n=7, 27%), and *unprepared for advanced RDM* (n=5, 19%). Over 92% (n=111, 92.5%) indicated “very likely” or “somewhat likely” to participate in online RDM training, only three (2.5%) were “somewhat unlikely” or “very unlikely.”

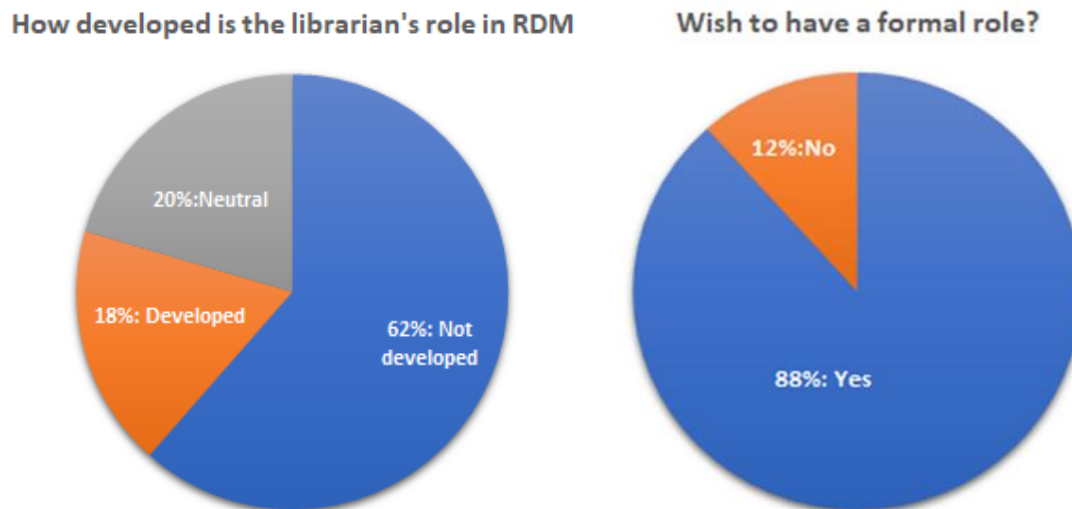


Figure 1. Librarians' Role in RDM Services.

Essential RDM knowledge and skills.

The most frequent responses discussing the three essential RDM skills were *data/file documentation* (n=17, 26.93%), *metadata* (n=13, 20.63%), and *DMPs* (n=13, 20.63%). Figure 2 includes the common responses.

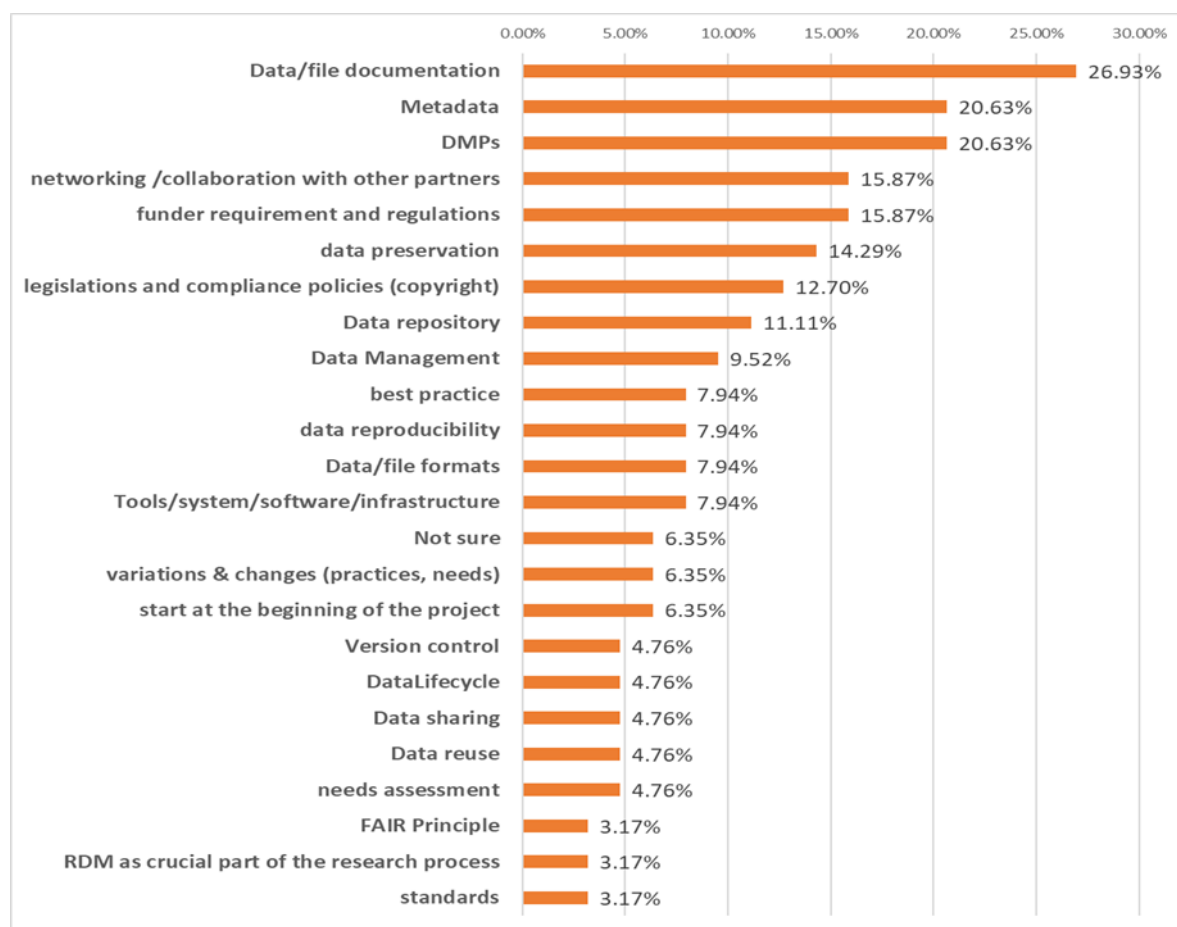


Figure 2. Essential RDM Knowledge and Skills.

As to what further RDM training was needed (see Figure 3), the most frequent answers were *advanced data management skills such as data analysis, preservation, acquisition and de-identification* (n=15, 22.73%) and *learning about DM or open source tools* (n=14, 21.21%).

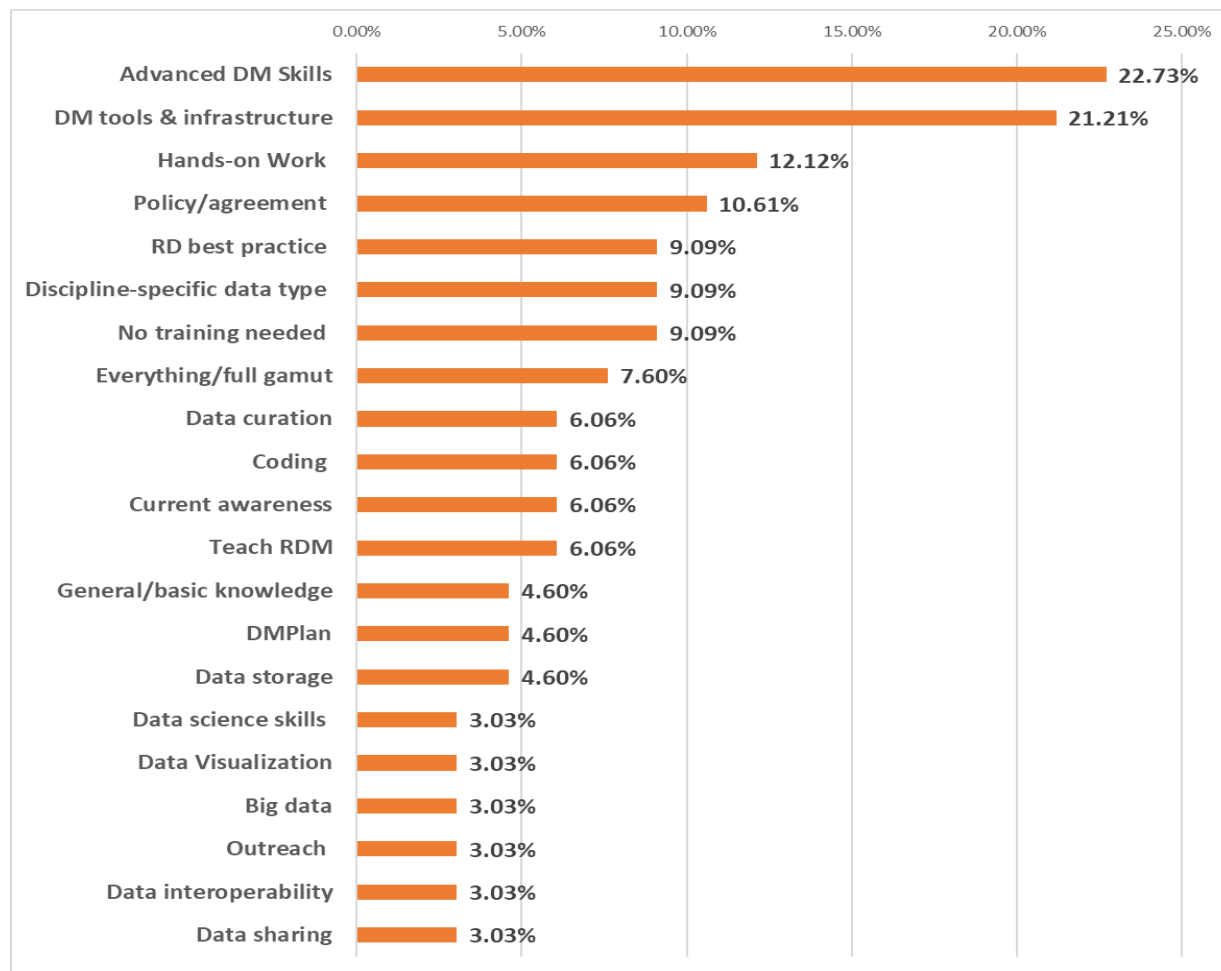


Figure 3. Common Responses to What Further RDM Training Needed.

Training for librarians and researchers.

As seen in Table 1, participants' top five responses about RDM training needed for librarians differed from their top five responses about RDM training needed for researchers. While *data service/science skills* (n=13, 22.95%) and *skills regarding data reference interviews* (n=11, 15.30%) are the top two most common responses on training needed for librarians, training on *data management and data processing* (n=12, 17.65%) and *data storage and data preservation* (n=11, 16.18%) were viewed by highest number of respondents as needed for researchers.

RDM Training for Information Professionals (n=61)	RDM Training for Researchers (n=68)
Data services/science skills (13, 22.95%)	Data Management/ Data processing (12, 17.65%)
Skills regarding data reference interview (11, 15.3%)	Data Storage / Data Preservation (11, 16.18%)
Basic training (8, 13.11%)	DMP (9, 13.24%)
Connecting with the researcher and faculty (8, 13.11%)	Data Sharing/Data Dissemination (9, 13.24%)
Depending on the knowledge that the librarians have, and their institutional needs (6, 9.84%)	Data File/Documentation (8, 11.76%)

Table 1. RDM Training for Librarians and for Researchers.

RDM evolving role.

With regard to librarians' evolving role in RDM, 11 (20.75%) stated "supporting researchers with RDM", while ten (18.87%) reaffirmed the "importance of the librarians' role in RDM". Nine (16.68%) suggested "connecting and partnering with others", and nine (16.68%) believed "librarians should be embedded in the research/data lifecycle."

Participants stressed librarians' valuable contribution to RDM. One participant stated, "I am the only librarian by degree in a data services group of six people; I think data viz, GIS, DH, etc. are attracting a wide variety of people, but RDM is a place where librarians excel because it speaks to our strengths for making information documented and discoverable. As collections are seen as data and data as collections ...we are key parts of the ecosystem."

CONCLUSIONS



Figure 4. RDMLA Curriculum Framework.

Findings of the survey formed the foundation of the RDMLA curriculum framework, which includes eight units as shown in Figure 4. This study provides insights into the current RDM practices and challenges. With a majority of the respondents recognizing its importance and hoping to receive more training while expressing concerns of lack of bandwidth or capacity in this area, it is clear that in order to grow RDM services, the institutional commitment to resources and training opportunities is crucial. As an emergent profession, data librarians need to be nurtured and further trained. RDMLA is an effort to provide open education for librarians who strive for leading and providing high quality RDM services. Through RDMLA, librarians around the world will form a community of learning and cultivate the advancement of RDM.

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